A glance through the pamphlet will give an idea of what kind of products different parts of the world are yet capable of supplying.

LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

American Weather

I INCLOSE you a cutting from the *Manitoba Weekly Free Press* of December 14, 1878, containing a record of what I cannot but think is a phenomenon unsurpassed in the annals of meteorology. For a month to exceed its average temperature by the amount of twenty-five degrees is scarcely credible even in such a continental climate as that of Manitoba. An editorial paragraph from the same paper which I also inclose will show that the fact has not been overlooked by the Manitobans, and that their attention has also been drawn to the occurrence of the reverse characteristics in the weather over here. Surely the moral of all this is universal synoptic weather charts. The whole thing at present is worked on far too small a scale. The daily papers contain a weather chart which comprises scarcely a quarter of Europe, and of what goes on outside the limits of this we are practically ignorant, unless we hunt up reports when the atmospheric conditions they refer to are long past. Even granting the impossibility of drawing the daily isobars over the North Atlantic, except hypothetically, would it not probably have thrown much light on the proximate causes of, and probable duration of, our recent cold weather here, had we been able to secure a daily synoptic chart of the isobars over America, as well as those over our own islands and the countries immediately adjacent? Surely the valuable results which would follow such an extension of our present system would quite compensate for the extra outlay incurred.

E. D. ARCHIBALD

January 11

"*Weather Record for November*

"The following is Mr. Stewart's monthly record of the weather:—

"The highest reading of the barometer in the month was 29·650 at 7 A.M. on the 7th; the lowest reading was 28·643 on the 26th, showing a monthly range of 1·007 inches. The mean barometrical pressure for the month was 29·1377 inches. The highest temperature in the month was 53·3 on the 17th; the lowest temperature was 10·3 on the 30th; the warmest day was the 17th, the mean temperature being 44·10; the coldest day was the 29th, the mean temperature being 18·25. The mean temperature of the month was 30·75, being 25·73 *higher than the average of the month for the past seven years*. The mean monthly pressure of aqueous vapour was 0·148, and the mean humidity of the month was 83. The mean amount of sky clouded was 0·45. The highest wind in the month occurred at 8 A.M., on the 14th, the force being at the rate of 24 miles per hour. The most windy day in the month was the 14th, the average daily force being 15·92 miles per hour; the least windy day was the 7th, the average daily force being 2·42 miles per hour; the mean monthly velocity was 7·89 miles per hour. The prevailing direction of the wind was south. The total amount of rain that fell during the month was 0·070 inches; total amount of snow, 1·45. Total precipitation of rain and melted snow, 0·220 inches. The Red River opened again on the 18th. On the same day the steamboat *Lady Ellen* arrived from Lake Winnipeg; on the 23rd the steamer *Cheyenne* arrived from Pembina. The Red River was finally frozen over on the 27th. Two auroras and two lunar coronas were seen in the month."

The following is the editorial comment referred to:—

"The peculiar freaks of the weather during the last year or wo have defied the most ingenious efforts of the weather prophets to foreshadow its complexion with any degree of truthfulness. It is a comparatively easy task to depict the general characteristics of a season under ordinary circumstances, when the seasons for a number of years have shown no marked deviation from their usual regularity, but the abnormal nature of the weather of late has set the prophets completely at sea. The predictions of those wise-acres who, a month or two ago, told us the present season was to be excessively severe, and cited the musk-rats, the beavers, and the cornshucks, to support the prognosis, have not been verified up to the present, and without attempting the prophecy business ourselves, we would remark that the indications are against any unusual severity this season. *November has been mild to a marked degree*, and indeed the whole fall, which has just passed into winter, has been exceptionally pleasant. There has been severe weather both in Europe and Asia, and heavy frosts have fallen in England, Austria and Italy—and it has been remarked that when the winters in the Old World are very cold, they are very moderate in America."

The Microphone

IN a recent letter (NATURE, vol. xix. p. 221) Dr. Bleekrode mentions the fact that a microphone through which a strong current is sent emits an audible sound; the electro-dynamical action of the current on its movable part is considered the origin of it.

The experiment is a very interesting one, and is nearly related to the facts I published in NATURE, vol. xviii. p. 642. But I cannot agree with Dr. Bleekrode in the interpretation. It is my opinion that no electro-dynamical action is in play, but only a dilatation at the points of contact.

In a circuit were placed a battery, a tangent-galvanometer, and two pieces of carbon, which supported a third one. A sound was heard and sparks were seen. The galvanometer showed that the intensity of the current increased, the deflection increasing from five to ten degrees. This proves the influence of the clouds formed at the points of contact.

The pieces of carbon were then inclosed in very flat sheets of platinum, and the experiment repeated. No sound was heard; the deflection of the galvanometer rose to 28°. When a rough sheet of platinum was taken the intensity of the current fell again, sparks were seen, and a sound was heard.

Dr. Bleekrode believes that, the coefficient of dilatation of carbon being small, the sound cannot be caused by dilatation at the points of contact. But the temperature of those points is very high, a great part of the heat generated in the circuit being produced here.

I cannot see that his experiment is a true demonstration of the repulsive action between the subsequent parts of a current. In my opinion the experiments of von Ettingshausen (*Sitzungsberichte der Wiener Akademie*, lxxvii. p. 109) are considerably more convincing. Von Ettingshausen found that, with a current which was somewhat stronger than the one I made use of, the influence of the earth-magnetism was almost as great as that of the electro-dynamical action. Moreover, this action depends upon the relative position of the movable part and the other parts of the circuit. Now I have not been able to detect the slightest variations in the sound by changing the position of the movable piece of carbon in relation to the direction of the dipping needle, or in relation to the other parts of the circuit.

I therefore hold to the explanation of the acting of the microphone as a receiver, which I believe I was the first to propose. In my opinion it depends upon the varying dilatation at the points of contact by the varying intensity of the current.

Breda, Holland, January 13

V. A. JULIUS

The Formation of Mountains

THE quotation given by Mr. Wallace from the English Cyclopædia affords a sufficient basis to prove "the more rapid [present] cooling of the interior of the globe than of the crust." I will add a passage from Sir W. Thomson's "Secular Cooling of the Earth," of a like tendency: "I think it cannot be denied that a large mass of melted rock, exposed freely to our air and sky, will, after it once becomes crusted over, present in a few hours or a few days, or at most a few weeks, a surface so cool that it can be walked over with impunity. Hence, after 10,000 years, or, indeed, I may say a single year, its condition will be sensibly the same as if the actual lowering of temperature experienced by the surface had been produced in an instant, and maintained constant ever after."[1]

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[1] *Trans.* R.S. Edin., 1862; also Thomson and Tait's "Nat. Phil.," App. D.

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This constant temperature of the surface having been once established, the internal parts would be hotter than the crust, and their heat must then necessarily, by the law of conduction, pass from the hotter to the cooler region, and so into and through the crust, and be radiated away from the surface into space, the kind of action which I illustrated in my former letter by the dispersion of a crowd. Thus the interior would tend to fall to the already established temperature of the surface, and thenceforth tend to cool more rapidly than the "crust." For the nearer a stratum lies to the surface, the less cooling will be requisite to bring it down to the temperature of the surface. To take the extreme case; after the lapse of an infinite time the whole globe would eventually become of the temperature which the surface assumed at that already far-distant epoch, and has maintained ever since.

When the superficial strata had early assumed their nearly permanent temperature, they will concomitantly have attained a corresponding permanent volume, which will afterwards have proved too large for the cooling interior, so that they must, in subsiding, have become wrinkled. To this extent, then, I think Mr. Wallace's objections are untenable. Here, however, enters the question, so difficult to answer in nearly all geological problems, of "How much?" For my part, I think I have proved that the mere cooling, though a *vera causa*, would not be of itself a sufficient cause to account for the inequalities existing now, at what must be, judging by the enormous store of heat still within the earth, a comparatively early stage of the cooling.[1] O. FISHER

Harlton, Cambridge, January 18

Leibnitz's Mathematics

IN NATURE, vol. xix. p. 196, I see there is a letter respecting the claims of Newton and Leibnitz to the discovery of the differential calculus. In view of any future discussion of this matter it seems to me that the following extract from a letter of Leibnitz to James Bernoulli is worth the consideration of the advocates of both claimants:—

"Ego qui semper hoc habui eximium, ut essem mortalium docillimus, sæpeque luce ex unius magni viri verbis pauculis hausta innumera mea meditata nondum matura delevi; statim arripere monita summi mathematici."—Ex epistola Leibnitii ad Jac. Bernoullium, April, 1703, data.

The sense of this passage may, I think, be fairly rendered into English as follows:—

"I [am one] who ever regarded this as most important, that I should be most apt of mortals to receive instruction, and frequently light having been drawn from a very few words of a great man, my countless meditations not yet ripened I have blotted out forthwith to seize upon the hints of the most eminent mathematician." JAMES BOTTOMLEY

Lower Broughton, near Manchester, January 13

I HOLD myself prepared to make good my own assertions, and to respond to Mr. A. B. Nelson's call as soon as I know whether Prof. Tait has abandoned his position, or, if not, what he has to say in justification of his proceeding in denying Leibnitz to be a mathematician and affirming him to be a thief.

I am sure the editor will allow me to reply to his postscript. It is certainly not to be presumed, as a matter of course, that when Prof. Tait "lets pass such a challenge he has given up his point." But I do insist upon it that this "hard-worked scientist" had no right to pass it by after having provoked it. He put himself in the wrong, and I left him there.

But as to this being a question of merely "antiquarian interest," I take leave to deny it. I revere the name and intellect of Leibnitz, and I, for one, have a human interest in clearing that name from a foul slander. Nor should we pass by the main issue to discuss the collateral question which the editor raises in respect of Gregory's series. C. M. INGLEBY

Valentines, Ilford

German Degrees

IT having come to the certain knowledge of the Faculty of Philosophy in the University of Erlangen that a fraudulent trade is carried on in England under a pretence of procuring doctor diplomas of the said Faculty, I consider it in the interest of the public hereby to make it known that promotions *in absentia* are not conferred in that faculty, and that no one in England, or elsewhere, is, or has ever been, authorised to confer or negotiate for the conferring of such diplomas.

E. LOMMEL,
Dean of the Faculty of Philosophy,
University of Erlangen, Bavaria

Erlangen, January 14

Feeding a Python

THE following details of a recent attempt to feed a python now at the Raffles Museum, Singapore, may be of interest as upsetting previous ideas as to the certainty of that reptile's attack:—

The python in question is a fine specimen caught on the island, for the sake of the reward given by the police in such cases, and measures about 22 feet in length. It has been in my charge for about two and a half months, during which time it has not been fed. About ten days since it commenced casting its skin, and, as is usual after that proceeding, was unusually lively, snapping at a stick put into the cage, and in one or two instances narrowly missing the attendant's hand. The reptile, I should mention, escaped from its cage just before casting, but having taken refuge beneath some odds and ends of timber near the museum, was recaptured without difficulty, and was then placed in a cage about 5 feet square every way.

A pariah dog having been obtained, it was introduced, muzzled, into the cage, the muzzle being then slipped. While entering, the snake struck twice at the dog's hind-quarters, but without seizing it. The dog crept into a corner and sat down. Two or three more blows were then made by the snake, but, as before, without gripping, and the dog was then seen to have been struck by the teeth on the fore-quarters, the punctures slightly bleeding. *For nine successive times* the snake struck at the dog with the same ill-success, and as it was then growing dark, the shutter of the cage was closed. Early next morning the snake was found coiled round the dog, which it had killed and commenced to swallow; but a Malay attendant having touched the python with a rod, it untwined itself and retreated to a corner of the cage, refusing to again touch its prey.

I may be misinformed, but have always understood that snakes of the python or boa tribe seldom renew their attacks if the first fails; and I shall be glad if you can direct me to any published experience on the subject. The python in question is a male.

Singapore, November 25, 1878 N. B. D.

Shakespeare's Colour Names

I FEAR it would be somewhat rash to convict Shakespeare of colour-blindness, or even vagueness in the use of colour-names, solely on the evidence of the Nurse in "Romeo and Juliet"—a lady who is the Mrs. Malaprop of the play, and whose extraordinary faculty for the confusion of terms may perhaps have contributed somewhat to the "merriness" with which she credited her husband. It is possible that the Nurse—in the passage quoted by Mr. J. J. Murphy (NATURE, vol. xix. p. 197)—meant to convey the idea of a *hazel* eye, which would not be far removed in colour from that of an eagle, but also often has a slight tendency to a greenish hue. The nurse, not being particular as to the precision of her descriptions in general, refers to it as green.

It is likely besides that Shakespeare deliberately intended the incongruity, just as in the "Midsummer Night's Dream" he makes the bumpkin who acts Thisbe in that piece of "very tragical mirth," *Pyramus and Thisbe*, lament

> "Those lily brows,
> This cherry nose,
> These yellow cowslip cheeks,
> . . . . . .
> *His eyes were green as leeks.*"

This passage indeed shows that Shakespeare knew perfectly well the chromatic meaning of green.

A very cursory glance through Shakespeare will show innumerable lines where colours are referred to in their true and exact sense.

Here are a few passages selected with special reference to the colours green and blue.

Prospero's description of the witch Sycorax:—

> "This blue-eyed hag."—*Tempest*, i. sc. 2.

(The ideal Scandinavian witch.)

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[1] Cambridge *Phil. Trans.*, vol. xii. part 2.

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